IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Robert J. Watts — PATENT APPLICATION
Serial No.: 09/529,482 — Group Art Unit: 3624
Filed: October 12, 1998 (IA filing date) — Examiner: L.M. Hamilton
For: ANKLE-FOOT ORTHOSIS

Clean Claims

1. An ankle-foot orthosis comprising:

a first tubular portion formed of silicone; said first tubular portion having a first end, a second end, a peripheral wall extending in a first direction from said first end to said second end, and means defining an opening in said peripheral wall;

closing means selectively operable to close said opening in said peripheral wall of said first tubular portion; and

a second tubular portion formed of silicone and having a first end and a second end, at least a portion of said first end of said second tubular portion being contiguous with at least a portion of said second end of said first portion; said second tubular portion being formed integrally with said first tubular portion to extend from said first portion in a second direction transverse to said first direction;

wherein said orthosis is arranged to be worn by a patient so that said first tubular portion envelops the patient's ankle and the entire circumference of a portion of the patient's lower leg in the vicinity of the ankle, and said second tubular portion envelops at least a portion of the plantar and dorsal aspects of the patient's foot, said first and second tubular portions being resiliently flexible to resist plantarflexion of the patient's foot.

2. An orthosis according to Claim 1, comprising a reinforcing means for providing a further resistance to plantarflexion of the patient's foot.

103 D fig. 6 fig. 6: 200, 202, 210, 212

col. 5: 67 + col. 6: 7

3. An orthosis according to Claim 2, wherein the reinforcing means comprises a length of tape, a first end and a second end of the tape being joined together to form a figure-of-eight passing under the instep, behind the ankle and crossing on the dorsal aspect of the foot.

103 ifv Mann fig. 1: 34 + 36

4. An orthosis according to Claim 2, wherein the reinforcing means comprises a rib running along at least a portion of the dorsal aspect of the foot and substantially midway between the medial malleolus and the lateral malleolus.

103 ifv Bowdan fig. 7: 8

5. An orthosis according to Claim 4, wherein the rib is of plastics.

col. 2: 20-25

103 ifv Bowdan,

6. An orthosis according to Claim 4, wherein the rib is of silicone.

103 ifv Bowdan c.c. dr

7. An orthosis according to Claim 4, wherein the rib is of polypropylene.

103 ifv Bowdan c.c. dr

8. An orthosis according to Claim 4, wherein the rib is of ortholene.

Bowdan c.c. dr

103 ifv

9. An orthosis according to Claim 4, wherein the rib is of carbon fibre.

10. An orthosis according to Claim 4, wherein the reinforcing means has a greater resilience than the resilience of said first and second tubular portions.

11. An orthosis according to Claim 1, wherein said opening comprises an insertion slit extending substantially midway between the medial malleolus and the lateral malleolus at the back of the ankle towards the calcaneum.

12. An orthosis according to Claim 11, wherein the closing means comprises a mechanical hook and loop fastener, a set of hoops or hooks being provided on one side of the slit and a corresponding set of hooks or hoops being provided on a closure member affixed to the other side of the slit, respective hooks and loops being connectable to securely close the slit.

13. An orthosis according to Claim 11, wherein the closing means comprises a zip fastener secured to opposite sides of the slit.

14. (Canceled)

15. An orthosis according to Claim 1, wherein said second tubular portion does not envelop the patient's toes.

103 DIV. G Fig. 4

16. An orthosis according to Claim 1, wherein said second tubular portion does not envelop the patient's calcaneum.

103 iv Bledsoe Fig. 3

17. An orthosis according to Claim 1, wherein the first and second tubular portions are of 35 shore silicone elastomer.

103 DIV. G c.o.m

18. An orthosis according to Claim 1, wherein the orthosis is skin coloured.

103 DIV. G depuchelle

19. An orthosis according to Claim 1, wherein the orthosis is fabricated by injection moulding. 103 DIV. G

20. An orthosis according to Claim 1, wherein the orthosis is stamped or pressed from sheet material.

103 DIV. G Col. 5. 53-58

21. (Canceled)
22. (Canceled)
23. (Canceled)
24. (Canceled)
25. (Canceled)
26. (Canceled)
27. (Canceled)

28. An orthosis according to Claim 6, wherein said rib is integrally formed with said first and second tubular portions.

29. An orthosis according to Claim 2, wherein said reinforcing means comprises a first region of said peripheral wall of said first tubular structure and a second region of a peripheral wall of said second tubular structure, wherein said first and second regions are contiguous and a resilience of said first and second tubular portion peripheral walls inside said first and second regions is greater than a resilience of said first and second tubular portion peripheral walls outside of said first and second regions.

30. An ankle-foot orthosis according to Claim 1, wherein said first tubular portion and said second tubular portion together define a generally L-shaped cavity.

31. An ankle foot orthosis for resisting plantarflexion of a patient's foot, the orthosis comprising:

a resiliently flexible L-shaped silicone structure having a first tubular portion, and a second tubular portion that is at least partly contiguous with said first portion and is formed integrally therewith, the structure having an outer surface consisting of a first region having a first resilience and a second region with a second resilience that is greater than said first resilience;

wherein said structure is configured so that said second region overlies at least a portion of a dorsal aspect of the patient's foot and a portion of the patient's lower leg when the orthosis is worn by the patient, said second region

being provided to augment the resistance to plantarflexion of the patient's foot provided by the silicone structure of the orthosis.

32. (Canceled)

33. An ankle-foot orthosis according to Claim 1, wherein said second tubular portion additionally envelops both the patient's toes and the patient's calcaneum ← D

103 Fr Mantle

34. An ankle-foot orthosis according to Claim 1, wherein said first and second tubular portions are formed by manually applying a silicone elastomer to a cast of the patient's foot.

103 Div. G